

# THE EFFECT OF CONTEXTUAL TEACHING AND LEARNING (CTL) LEARNING MODEL ON THE LEARNING OUTCOMES OF CREATIVE PROJECTS AND ENTREPRENEURSHIP OF CLASS XI STUDENTS OF HKBP PEMATANGSIANTAR PRIVATE VOCATIONAL SCHOOLS IN THE ACADEMIC YEAR 2024/2025

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## Abstract

This study aims to determine the Effect of the Contextual Teaching and Learning (CTL) Learning Model on the Learning Outcomes of Creative Projects and Entrepreneurship of Class XI Students of HKBP Pematangsiantar Private Vocational Schools in the Academic Year 2024/2025. This study uses a pre-experimental research method of the one-group posttest-questionnaire type. Based on the partial hypothesis test, the results show that there is a positive and significant influence between Contextual Teaching and Learning (CTL) on learning outcomes as indicated by the t count (2.069) > t table (2.00324). Based on the determination coefficient test, the Rsquare value was obtained at 0.072, which means that 7.2% of the Contextual Teaching and Learning (CTL) variable influences the Learning Outcomes of Creative Projects and Entrepreneurship of Class While 92.8% is the influence of other variables that were not examined in this study.

**Keywords:** *Contextual Teaching and Learning (CTL), Learning Outcomes.*

## INTRODUCTION

Education is a crucial element in human and societal development. Through education, students are expected to acquire knowledge, skills, and values useful for their personal and social lives. One of the main indicators of educational success is student learning outcomes. According to Bloom (1956), learning outcomes encompass the cognitive, affective, and psychomotor domains, reflecting the extent to which students understand and apply the material being taught. Optimal learning outcomes can only be achieved through an effective and contextual learning process, tailored to the characteristics of the students and the material being taught. In the context of vocational learning, such as the Creative Project and Entrepreneurship subject in Vocational High Schools (SMK), a learning approach that is able to integrate theory and practice directly is needed. This subject requires students to think creatively, innovatively, and be able to relate learning materials to the realities of the world of work. However, based on initial observations at the HKBP Pematangsiantar Private Vocational School, it was found that student learning outcomes in this subject are still relatively low. As many as 52.63% of grade XI TBSM 2 students have not achieved the Minimum Completion Criteria (KKM), indicating that more than half of students require additional guidance to optimally understand the material being taught.

One of the causes of these low learning outcomes is the continued dominance of conventional learning models, particularly the teacher-centered lecture method. This model tends to make students passive in the learning process and less actively involved in exploration and problem-solving. Effective learning, however, should be able to activate students' active role in connecting learning materials to their real-world experiences and environments (Slavin, 2012). Therefore, innovation is needed in a more participatory and contextual learning approach. The Contextual Teaching and Learning (CTL) model is one approach that can be used to address these issues. CTL emphasizes the connection between subject matter and students' real-life contexts, thus making the learning process more meaningful (Johnson, 2002). In this model, students are encouraged to learn through exploration,

collaboration, reflection, and the application of concepts in real-world contexts. Thus, learning is not only theoretical but also practical and relevant. CTL also aligns with constructivism theory, which emphasizes that students construct their own knowledge through active learning experiences. Previous research has shown that the implementation of CTL has a positive impact on improving student learning outcomes. For example, a study by Situmorang, Gultom, and Siahaan (2023) found a significant effect of the CTL model on the learning outcomes of 11th-grade students at SMA Negeri 4 Pematangsiantar. Similar findings were also revealed by Pasaribu et al. (2022) who examined the effect of CTL on biology learning outcomes at SMA Swasta Tamansiswa, showing that CTL significantly improved learning outcomes compared to conventional models. These results strengthen the argument that CTL is an effective learning approach to be applied in the context of Creative Projects and Entrepreneurship learning. Considering the low student learning outcomes, the ineffectiveness of conventional methods used, and the potential of CTL in increasing student engagement and understanding, this study was conducted to test the effect of the Contextual Teaching and Learning learning model on learning outcomes in the Creative Project and Entrepreneurship subject. This study is expected to contribute to the development of more relevant and effective learning models at the vocational high school level, especially in subjects oriented towards entrepreneurial skills.

## **LITERATURE REVIEW**

### **Learning outcomes**

Learning outcomes are the primary indicator of the success of the educational process and reflect the extent to which students understand the learning material. According to Bloom (1956), learning outcomes encompass three domains: cognitive, affective, and psychomotor. The cognitive domain relates to thinking skills and knowledge, the affective domain relates to attitudes and values, and the psychomotor domain encompasses physical skills and concrete actions. Ananda and Hayati (2020) explain that cognitive learning outcome indicators can be measured by students' ability to explain, provide examples, and solve problems based on the material taught. Therefore, evaluation of learning outcomes must be carried out comprehensively and reflect all three domains.

According to Zuhro (2016), learning outcomes are the output of the planning and implementation of the learning process, accompanied by objective data. This means that learning outcomes not only reflect students' understanding of the material but also the quality of the learning process itself. Factors such as student engagement, the learning method used, and the learning environment significantly influence student learning outcomes. Ropi and Fahrurrozi (2017) added that learning outcomes reflect the depth and complexity of student understanding, which can be measured with appropriate evaluation techniques. Therefore, an effective learning model must be designed to achieve maximum learning outcomes. Several factors are known to influence student learning outcomes, both internally and externally. Salsabila and Puspitasari (2020) categorize internal factors as students' physiological and psychological conditions, such as interest, motivation, and intellectual ability. External factors include teaching quality, the school environment, the curriculum, and the learning model applied. Yanuarti and Sobandi (2016) emphasize the importance of selecting an appropriate learning model to encourage optimal learning outcomes. Therefore, learning approaches such as Contextual Teaching and Learning are considered crucial for significantly improving learning outcomes.

### **Contextual Teaching and Learning (CTL) Learning Model**

Contextual Teaching and Learning (CTL) is a learning approach that emphasizes the connection between subject matter and students' real-life contexts. Johnson (2002) states that CTL is a learning system that helps students understand material by linking lesson content to their life experiences. In CTL, students play an active role in discovering, understanding, and applying knowledge through exploration, discussion, reflection, and problem-solving. The teacher functions as a facilitator, guiding students in connecting theory with practice. Thus, CTL aligns with the constructivist approach, which positions students as active subjects in the learning process. CTL has seven main components: constructivism, questioning, discovery, learning communities, modeling, reflection, and authentic assessment (Suyadi, 2015). The constructivism component emphasizes that students construct their own understanding based on prior knowledge. The questioning and discovery components help students develop critical and independent thinking skills. Learning communities emphasize group collaboration, while modeling and reflection encourage in-depth understanding through examples and self-evaluation. Authentic assessment is used to holistically measure student abilities based on the learning process and products produced. The application of CTL also incorporates principles designed to enhance learning effectiveness. Mashudi et al.

(2020) explain that CTL encourages students to connect material to real-life situations, making learning meaningful and relevant. Sunarsih (2020) adds that CTL avoids a one-way learning model and encourages students to actively seek and construct knowledge. In the context of vocational education, such as vocational high schools (SMK), this model is highly relevant because it can bridge the gap between theory and the workplace. The main characteristics of CTL include enjoyable learning, collaboration between students, the use of various learning resources, and encouragement of critical thinking (Fitrina, 2014). Students are encouraged to actively participate in learning, explore resources beyond the textbook, and share their understanding with classmates. These activities not only enhance understanding of the material but also develop soft skills such as collaboration, communication, and creativity. However, despite CTL's many advantages, this approach also has limitations. Hasudungan (2022) noted that CTL requires more time, thorough teacher preparation, and the teacher's ability to dynamically manage the classroom. Furthermore, students sometimes have difficulty connecting the material to real-world contexts, especially if their life experiences are limited. Therefore, the success of CTL depends heavily on teacher preparedness, systematic learning design, and the support of a conducive learning environment.

### **The Relationship between CTL and Learning Outcomes**

Various studies have shown that the use of CTL has a positive effect on student learning outcomes. Research by Situmorang, Gultom, and Siahaan (2023) found that CTL significantly improved the learning outcomes of 11th-grade students at SMA Negeri 4 Pematangsiantar. Similar results were also obtained by Pasaribu et al. (2022) in a study at SMA Tamansiswa Pematangsiantar, where students taught with CTL obtained higher grades than those taught using conventional methods. Furthermore, Putri (2019) also showed that the application of CTL assisted by Mesoyo media significantly improved the accounting learning outcomes of 10th-grade students at SMK Negeri 1 Medan. These findings indicate that the CTL model can simultaneously improve students' conceptual understanding and practical skills. This is especially important in subjects like Creative Projects and Entrepreneurship, where students are required to think critically, generate ideas, and connect knowledge to the workplace. Through CTL, students not only memorize concepts but also apply them in real-world contexts, making learning outcomes more meaningful and applicable.

## **METHOD**

### **Research Design**

This study employed a quantitative approach with a pre-experimental method, specifically a one-group posttest-only design. This design aimed to measure the effect of the Contextual Teaching and Learning (CTL) learning model on student learning outcomes after the treatment. In this design, only one experimental group was given the treatment (learning with the CTL model) and then given a post-treatment test (posttest), without a comparison group. This design was chosen due to its ease of implementation in the school environment and the limited time allocated for the study (Sugiyono, 2021). With this approach, it is hoped that the effectiveness of CTL implementation on learning outcomes in the Creative Projects and Entrepreneurship subjects can be determined.

### **Population and Sample**

The population in this study was all 57 students of grade XI TBSM at SMK Swasta HKBP Pematangsiantar in the 2024/2025 academic year, divided into two classes. The sample was taken using a saturated sample (total sampling), because the entire population was used as a research sample (Sutja et al., 2017). Class XI TBSM 2, consisting of 28 students, was designated as the experimental class and received treatment with the CTL learning model. Class XI TBSM 1 served as a control outside the measurement focus, used for documentation of previous grades, not as part of a formal experimental design. This technique was chosen because of the limited number of students and the need to directly observe changes in learning outcomes after treatment.

### **Research Variables**

This study involved two main variables. The independent variable (X) was the Contextual Teaching and Learning (CTL) model, a model that links learning to students' real-life contexts. The dependent variable (Y) was student learning outcomes in the Creative Projects and Entrepreneurship subject, as measured by a posttest. According to Sugiyono (2021), causal relationships between two variables such as these are commonly analyzed in experimental research, particularly in education, to assess the effectiveness of teaching strategies.

## **RESULTS AND DISCUSSION**

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## Hypothesis Test Results

### Simple Regression Analysis Test

Simple linear regression is used to see and measure the linear relationship between one independent variable (explanatory variable) and one dependent variable (response variable).

$$Y = \alpha + \beta X_1 + e$$

Based on the results of tests carried out with Microsoft Excel, the results of multiple linear analysis are as follows:

Table 1 Simple Linear Regression Analysis Test

Regression Statistics								
Multiple R	0,268693452							
R Square	0,072196171							
Adjusted R Square	0,055327011							
Standard Error	5,449696591							
Observations	57							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	127,1057923	127,1057923	4,279772606	0,043281813			
Residual	55	1633,455611	29,69919293					
Total	56	1760,561404						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	74,10086153	6,715087621	11,03498059	1,45722E-15	60,64352521	87,55819784	60,64352521	87,55819784
X	0,184281576	0,089078228	2,068761128	0,043281813	0,005764817	0,362798335	0,005764817	0,362798335

Source: Data Processing with Excel

The influence of the independent variable on the dependent variable was tested with a 95% confidence interval ( $\alpha = 5\%$ ). Based on Table 1, the constant value ( $\alpha$ ) is 74.101, while the value of Contextual Teaching and Learning ( $\beta$ ) is 0.184. Therefore, the regression equation is:

$$Y = \alpha + \beta X_1 + e$$

$$Y = 74.101 + 0.184X_1 + e$$

1. The constant value ( $\alpha$ ) of 74.101 can be interpreted that the Learning Outcomes in the Creative Project and Entrepreneurship Subject of class XI TBSM students of HKBP Pematangsiantar Private Vocational School in the 2024/2025 academic year (Y) will be worth 74.101 when Contextual Teaching and Learning (CTL) is worth zero.
2. The regression coefficient value of the Contextual Teaching and Learning (CTL) variable ( $\beta$ ) of 0.184 explains that an increase in Contextual Teaching and Learning (CTL) will increase Learning Outcomes in the PKKW subject for class XI TBSM students of SMK Swasta HKBP Pematangsiantar in the 2024/2025 academic year (Y) by 0.184 with other independent assumptions.
3. The regression coefficient has a positive value, so it can be said that the direction of the influence of variable X on Y is positive.

### T-Test (Partial Test)

Partial hypothesis testing (t-test) was conducted to determine the effect of Contextual Teaching and Learning (CTL) (X) on the Learning Outcomes of Class XI students in the Creative Project and Entrepreneurship Subjects (Y), on the Learning Outcomes of Class XI students in the PKKW Subject (Y) partially (respectively). This test was conducted to test the first hypothesis which states that there is a significant effect of Contextual Teaching and Learning (CTL) on the Learning Outcomes of Class XI students in TBSM SMK Swasta HKBP Pematangsiantar in the 2024/2025 academic year. To find the value of  $t_{(table)}$  the formula  $df = nk$  is used where  $n = 95$  and  $k = 1$  so that  $df = 57 - 1 = 56$  at the  $\alpha = 0.05$  level. From this calculation,  $t_{(table)}$  is 2.00324

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Table 2 Results of T-Test (Partial)

Regression Statistics								
Multiple R	0,268693452							
R Square	0,072196171							
Adjusted R Square	0,055327011							
Standard Error	5,449696591							
Observations	57							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	127,1057923	127,1057923	4,279772606	0,043281813			
Residual	55	1633,455611	29,69919293					
Total	56	1760,561404						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	74,10086153	6,715087621	11,03498059	1,45722E-15	60,64352521	87,55819784	60,64352521	87,55819784
X	0,184281576	0,089078228	2,068761128	0,043281813	0,005764817	0,362798335	0,005764817	0,362798335

Source: Data Processing with Excel

Based on table 2, the t-count value of X has a value of 2.069 with a significant value of  $\alpha = 0.043$  in accordance with the requirements of  $\text{sig} < 0.05$ . Thus,  $t\text{-count} > t\text{-table}$  ( $2.069 > 2.00324$ ) and the significant level of  $\alpha$  ( $0.043$ )  $< 0.05$  so that  $H_a$  is accepted and  $H_0$  is rejected. This shows that partially there is a positive and significant influence between Contextual Teaching and Learning (CTL) on student learning outcomes in the PKKW subject of class XI TBSM students of HKBP Pematangsiantar Private Vocational School in the 2024/2025 academic year.

## Coefficient of Determination (R2)

The coefficient of determination (R2) test is used to determine the extent of the contribution of the independent variable Contextual Teaching and Learning (CTL) (X) to the learning outcome variable (Y). The calculation of the coefficient of determination can be seen in the following table:

Table 3 Coefficient of Determination (R2)

Regression Statistics								
Multiple R	0,268693452							
R Square	0,072196171							
Adjusted R Square	0,055327011							
Standard Error	5,449696591							
Observations	57							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	127,1057923	127,1057923	4,279772606	0,043281813			
Residual	55	1633,455611	29,69919293					
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	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	74,10086153	6,715087621	11,03498059	1,45722E-15	60,64352521	87,55819784	60,64352521	87,55819784
X	0,184281576	0,089078228	2,068761128	0,043281813	0,005764817	0,362798335	0,005764817	0,362798335

Source: Data Processing with Excel

The coefficient of determination R Square in table 3 is known to be 0.072. Which means that 7.2% of the Contextual Teaching and Learning (CTL) variable influences student learning outcomes in the PKKW subject of class XI TBSM SMK Swadaya HKBP Pematangsiantar academic year 2024/2025. While 92.8% is the influence of other variables not examined in this study. The results of the analysis above have implications that the Contextual Teaching and Learning (CTL) learning model needs to be considered in order to improve student learning outcomes in the PKKW subject of class XI TBSM SMK Swadaya HKBP Pematangsiantar academic year



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2024/2025. This is important to increase the contribution of the Contextual Teaching and Learning (CTL) learning model variable by 7.2%.

## RESEARCH DISCUSSION

Based on the results of the classical assumption test, the normality test is the main requirement to be able to proceed to a simple regression analysis test with normally distributed data. In the Contextual Teaching and Learning (CTL) variable, student learning outcomes have been normally distributed between variables, so it can be seen that  $\chi^2$  table (33.924) >  $\chi^2$  count (24.912), so the data is normally distributed. The results of the multicollinearity test that Tolerance > 0.10 and Variance Inflation Factor (VIF) < 10, based on table 4.7 it is known that the Variance Inflation Factor (VIF) value of 1.000 < 10 and the Tolerance value of 1.000 > 0.10, it can be concluded that the data does not experience symptoms of multicollinearity. Based on table 4.9, it is known that the constant value (a) is 74.463 while the value of the school environment ( $\beta_1$ ) is 0.076 and the value of learning interest ( $\beta_2$ ) is 0.062, so the regression equation is:

$$Y = \alpha + \beta_1 X_2 + \beta_2 X_1 + e$$

$$Y = 74.101 + 0.184 X_1 + e$$

The constant of 74.101 means that the consistent value of the learning outcome variable is 74.101. The regression coefficient of X is 0.184. The regression coefficient is positive, so it can be said that the direction of the influence of variable X on Y is positive. The results of the t test based on table 4.11 the calculated t value of Contextual Teaching and Learning (CTL) (2.069) is greater than the t table (2.00324) and the significance value of 0.043 > 0.05 based on the results obtained then accept  $H_a$  and reject  $H_0$  for the Contextual Teaching and Learning (CTL) variable. Thus, there is a significant influence between Contextual Teaching and Learning (CTL) on student learning outcomes in the Creative Project and Entrepreneurship Subject of Class XI TBSM students of HKBP Pematangsiantar Private Vocational School in the 2024/2025 academic year. The coefficient of determination value of R Square in table 4.13 is known to be 0.072, which means that 7.2% of the Contextual Teaching and Learning (CTL) variable influences student learning outcomes in the Creative Project and Entrepreneurship Subject for Class XI TBSM students of HKBP Pematangsiantar Private Vocational School in the 2024/2025 academic year.

## CONCLUSION

Based on the results of testing and discussion of the research data that have been collected regarding the Influence of the Contextual Teaching and Learning (CTL) Learning Model on the Learning Outcomes of Creative Projects and Entrepreneurship of Class XI Students of HKBP Pematangsiantar Private Vocational School in the 2024/2025 Academic Year, the following conclusions can be drawn: There is a positive and significant influence of the Contextual Teaching and Learning learning model on the Learning Outcomes of Creative Projects and Entrepreneurship of Class XI TBSM 1 and XI TBSM 2 students of 57 students of HKBP Pematangsiantar Private Vocational Schools in the 2024/2025 academic year, which is shown by the calculated t value (2.069) > t table (2.00324). This shows that the more appropriate the learning is delivered with the CTL model, the higher the learning outcomes of students. Based on the coefficient of determination test, an Rsquare value of 0.072 was obtained, which means 7.2% of the Contextual Teaching and Learning (CTL) learning model variables on the Learning Outcomes of Creative Projects and Entrepreneurship of Class XI Students of HKBP Pematangsiantar Private Vocational Schools in the 2024/2025 academic year. While 92.8% is the influence of other variables not examined in this study. This means that student learning outcomes are influenced by the Contextual Teaching and Learning (CTL) learning model.

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